Taiwan Semiconductor Manufacturing (TSM) Earnings Report: Q2 2015 Conference Call Transcript

The following Taiwan Semiconductor Manufacturing conference call took place on July 16, 2015, 02:00 AM ET. This is a transcript of that earnings call:

Company Participants

- Elizabeth Sun; Taiwan Semiconductor Manufacturing; Director of Corporate Communications
- Lora Ho; Taiwan Semiconductor Manufacturing; SVP, CFO
- Mark Liu; Taiwan Semiconductor Manufacturing; President and Co-CEO
- C.C. Wei; Taiwan Semiconductor Manufacturing; President and Co-CEO
- Morris Chang; Taiwan Semiconductor Manufacturing; Chairman

Other Participants

- Daniel Heyler; BofA Merrill Lynch; Analyst
- Michael Chou; Deutsche Bank; Analyst
- Randy Abrams; Credit Suisse; Analyst
- Donald Lu; Goldman Sachs; Analyst
- Eric Chen; UBS; Analyst
- Roland Shu; Citigroup; Analyst
- Rick Hsu; Daiwa; Analyst
- Michael Chou; Deutsche Bank; Analyst
- Gokul Hariharan; JPMorgan; Analyst
- Randy Abrams; Credit Suisse; Analyst

MANAGEMENT DISCUSSION SECTION

Elizabeth Sun (Director of Corporate Communications):

(interpreted) Welcome to TSMC's second quarter 2015 earnings conference and conference call. This is Elizabeth Sun, TSMC's Director of Corporate Communications, and your host for today.

Today's event is webcast live via TSMC's website at www.tsmc.com. If you are joining us through the conference call, your dial-in lines are in listen-only mode. As this conference is being viewed by investors around the world, we will conduct the event in English only.

The format for today's event will be as follows. First, TSMC's Senior Vice President and CFO, Ms. Lora Ho, will summarize our operations in the second quarter, followed by our guidance for the third quarter. Afterwards, TSMC's two co-CEOs, Dr. Mark Liu and Dr. C.C. Wei, and TSMC's CFO Lora Ho will jointly provide our key messages. After that, TSMC's Chairman, Dr. Morris Chang, will host the Q&A session.

For those participants on the call, if you do not yet have a copy of the press release, you may download it from TSMC's website at www.tsmc.com. Please also download the summary slides in relation to today's earnings conference presentation.

As usual, I would like to remind everybody that today's discussions may contain forward-looking

statements that are subject to significant risks and uncertainties, which could cause actual results to differ materially from those contained in the forward-looking statement. Please refer to the Safe Harbor Notice that appears on our press release.

And now, I would like to turn the podium to TSMC's CFO, Ms. Lora Ho, for the summary of operations and current quarter guidance.

Lora Ho (SVP, CFO):

Thank you, Elizabeth. Good afternoon, everyone. Welcome to join us today. My presentation will start with financial highlights for the second quarter, followed by the guidance for the third quarter.

So now let me summarize our second quarter financial performance. In the second quarter, we have achieved TWD205b in revenue, 48.5% gross margin, 37.5% operating margin, and TWD3.06 in EPS, which were all within our guidance range.

On a year-over-year basis, our revenue increased 12.2%, net income and EPS both increased 33% versus the last year same quarter. On a sequential basis, our revenue decreased by 7.5% due to customers' cautious inventory management and the less favorable exchange rate. However, we were able to largely offset the negative impacts with our continuous cost improvement efforts. Our gross margin decreased slightly to 48.5%.

For the non-operating items, we have reported again of TWD21b. This significant one-time gain mainly came from two transactions. First, the ASML share disposal, we recognized TWD17.6b in the second quarter, which contributed to TWD0.60 to our EPS. Also we sold 5% of Vanguard shares, with a gain of TWD2.3b, which contributed to TWD0.08 of the second quarter EPS. The share disposal does not change our strategic relationship with ASML and Vanguard. We remain to be the largest shareholder of Vanguard, own 28%.

You may noticed we incurred higher tax rate in the second quarter. The tax expense went up to 24% in the second quarter as we accrued 10% retained earnings. We expect the 2015 full-year tax rate will be about 14%

Now, let's take a look at the revenue by application. During the second quarter, all major segments showed declines. Communication, computer, consumer, and industrial standards declined 3%, 24%, 21% and 1%, respectively.

In terms of revenue by technology, revenue contribution from 20 nanometer went up to 20% from 16% in the first quarter, while 28 nanometer contributed 27% of our wafer revenue this quarter. Accordingly, these two technologies, 20 nanometer and 28 nanometer, represented 47% of our second quarter wafer revenue, increased from the 46% from the first quarter.

Moving to balance sheet. On the asset side, cash and marketable securities increased TWD32b to reach TWD550b at the end of the second quarter. On the liability side, current liabilities increased TWD122b, which was due to the accrual of TWD117b for cash dividend.

On financial ratios, accounts receivable turnover days remained flat at 44 days. Days of inventory increased by 5 days to 62 days as we preview certain wafers in anticipation of the capacity conversion from 20 nanometer to 16 nanometer. In addition, higher raw material and longer production cycle time for leading nodes also increased the DOI a bit.

Lastly, I would like to make a few comments on cash flow and CapEx. During the second quarter we generated TWD111b cash from operations and invested TWD54b in capital expenditure. Additionally, we received TWD39b from disposal of ASML shares and about TWD4b from the sell-down of 5% Vanguard

shares.

On financial -- financing cash flow, we repaid TWD13b for short-term debt. As a result, our cash balance reached TWD529b at the end of the second quarter.

The above are my comments on the second quarter financial performance. Now let me turn to the third-quarter outlook. Due to the end-demand recovery is not as strong as we expected earlier, customer continue to remain cautious in inventory management. Combining these factors with customers' production -- product transition, demand for our third quarter is expected to recover only modestly.

Based on our current business outlook and exchange rate assumption of $1 to TWD31, we expect third quarter revenue to be between TWD207b and TWD210b, translate into 1% to 2% sequential growth; gross profit margin to be between 47% and 49%; and operating margin to be between 36.5% and 38.5%.

As the remaining 20% ASML shares will be sold in the second half, we expect to recognize additional TWD4b disposal gain in the second half, which will translate into TWD0.12 and TWD0.01 EPS contribution to the third quarter and fourth quarter, respectively.

This concludes my remarks. Let me turn the podium to co-CEO Mark Liu for his comments.

Mark Liu (President and Co-CEO):

Good afternoon. I'd like to deliver the several key message to you. The first, I will cover the near-term demand and supply chain inventory. Lora reported our second-quarter results were in line with guidance made in our last investor meeting, which shows a 12.2% year-to-year revenue growth. In the April investor conference, we have also noted that supply chain inventory was quite high at the end of first quarter, but it was expected to be brought down to a seasonal level at the end of Q2.

However, during the second quarter, Q2, we saw demand for smartphones became weaker than we expected, due to slower demand in emerging markets and in China for mid and low-end smartphones. This weaker demand is partly due to a strong US dollar to emerging market currencies and partly due to the regional economic conditions. As a result, the excess inventory in the supply chain has only been digested about half at the end of second quarter.

The recent macro economy uncertainties in many parts of the world has further dampened supply chain's confidence in end-market demand and has caused customers to become even more cautious in managing their inventory. Slow demand in emerging markets and in China, more cautious inventory management by our customers, and macroeconomic uncertainties in many parts of the world -- those three reasons are behind our modest growth outlook in the third quarter.

That being said, we expect our customers' end-market demand will improve in the second half from the first half. Growth is expected to come from industrial and automotive segments, as well as from new iPhone launches and several launches of Android-based high-end phones. In addition, the continuing 4G migration in China and the demand recovery in emerging markets will further support the growth outlook of second half this year.

But as the demand outlook has changed, we update our 2015 full-year growth forecast as follows. Semiconductor growth revised from 4% to 3%. Foundry growth from 10% to 6%. For TSMC, we are still confident to outperform the foundry segment and still target double-digit growth rates this year.

Now the message on TSMC market segment share. Thanks to our strong leadership in advanced technologies, TSMC has been able to gain foundry market segment shares in recent years. This year our market share will again be well-supported by the expansion of our advanced notes, namely 16 nanometer, 20 nanometer and 28 nanometer.

For 16 nanometer, we are starting our volume shipment as we speak. The ramping of our 16 nanometer will be very steep, even steeper than our 20 nanometer. Ramping profile, similar ramping profile as similar early stage.

Looking out to the future, with many more customers joining our 16 nanometer production, we are confident that we will achieve a far majority foundry share in 16 nanometer in 2016 and beyond.

For 20 nanometer, we remain the only foundry capable of volume supply in the second year of its ramp-up. For 28 nanometer, we continue to strengthen our technology offerings. Following our 28LP, 28HPL, 28HPM, we have 28LPRF, 28HPC and 28HPC+. Those new offerings will enable us to protect our 28 nanometer foundry segment share.

With all the above, we continue to gain market segment share in 2015.

Lastly, I'd like to have some comments, key messages on advanced technology development on 10 nanometer and 7 nanometer. The recent progress of our 10 nanometer technology development is very encouraging and on track with our plan. Technology risk start qualification is targeted at the end of this year, followed by many customers' product qualifications. Our volume production is planned to start from the end of 2016.

Our 10-nanometer technology is designed with excellent transistor performance spec and very aggressive chip-scaling factors. Compared with TSMC's 16 FinFET+, our 10-nanometer features has more than 15% speed gain at the same total power, or more than 35% power reduction at the same speed, and with gate density of 2.2 times of that of 16 FinFET+.

Many of our first-wave technology adopters have signed up for tape-outs with our 10 nanometer. So far, planned tape-outs have already include mobile application processors, network processors, and high-performance computing segments.

The development activity on our 7 nanometer is also ongoing with full steam. We have a parallel team working on that program. We target 7-nanometer technology qualification in the first quarter 2017, only five quarters after 10 nanometer.

With further transistor speed enhancement and chip scaling from 10 nanometer, our customer can plan their tape-outs using the latest and the greatest technology available at the time when they launch their most competitive products. For 7 nanometer, similar to our 20-nanometer and 16-nanometer relationship, we are developing 7 nanometer to be able to leverage the process tool compatibility and maturity from 10-nanometer volume production.

Above is my message. Now I turn the podium to C.C.

C.C. Wei (President and Co-CEO):

Thank you, Mark. I will update the technology improvement volume manufacturing and competitiveness on three technology nodes, followed by an InFO business update.

First, on 28 nanometer, the demand outlook for TSMC's 28 nanometer remains strong. We continue to enhance our 28-nanometer technology, just like Mark just mentioned, by improving the performance. In addition to the 28LRP, 28HPM, we have introduced 28HPC last year to enable our customers' conversion to 64-bit CPU for mid- to low-end market. Our 28HPC+ introduced this year can enable our customers to go after the market with multi-core which is from 4 to 8 to 10 and advanced LTE such as LTE Category 6 to Categories 4 to 6.

In addition to addressing the demand for the mid to low-end smartphone market, we have already seen

demand for our 28-nanometer transceiver RF and the fast controller begin increasing over time. Based on tape-out activities, we also anticipate customer in Wi-Fi, wearable, digital TV, set-top box, and image signal process, will also start ramping next year using our 28 nanometer.

Ever since we introduced 28HPC and 28HPC+, we are met with customers' enthusiastic adoption. Almost all the new tape-outs are adopting either of these two processes. And the number of new tape-outs continue to increase and reaching a record level.

Our 28 nanometer building utilization rate was in the high 80s in second quarter, which is due to customers' inventory management. We expect this building utilization to be recovered to above 90% in third quarter, the same as we mentioned in our last conference. We intend to keep our 28-nanometer utilization rate very high by providing the best and useful technology such as our 28HPC and 28HPC+ to our customers so that their new products will grow nicely in the market, and that will translate to increasing demand and higher loading rate for us.

Meanwhile, after having manufactured 28 nanometer for more than five years, we can also use our learning curve or cost advantage to compete with good profit margins. To summarize, we will keep our utilization rate high and we will use our technology and our cost advantage to compete effectively for 28 nanometer business.

Next, 20 nanometer. Since we have begun ramping of 20 nanometer in the middle of last year, we have obtained the best progress in the reduction of defect density as compared to all previous nodes. We believe we will be able to leverage this record progress and enhance defect density reduction for our 16 nanometer.

The demand for our 20 nanometer this year is still good. We expect our revenue from 20 nanometer will at least double this. And since a majority of 20-nanometer business will migrate to 16 FinFET next year, we expect our 20-nanometer business will be lower than this year. However, we still expect 20 nanometer to be a long-lived node. We are converting right now part of 20-nanometer capacity into 16 FinFET to prepare for the ramp of 16 FinFET. So I move to 16 FinFET update.

We have begun volume production of 16 FinFET in second quarter. Shipment has started this month. The high volume ramp in third quarter were mostly contributed to revenue in fourth quarter this year.

Since 16 nanometer shares similar metal backend process with 20 nanometer, our 16 FinFET can benefit a lot from 20-nanometer's learning. We have already shipped more than 0.5m wafer 20 SoC by now, so our 16 nanometer's yield and defect density has been excellent. And in fact, our 16 FinFET has set a new record for progresses made in the defect density reduction.

As for device performance, we believe our 16 FinFET class has the best transistor performance among all foundries. For low-power application, we have been developing 16FFC, which will be cost effective and will be important for future of IoT applications as well.

Last, let me update on InFO business. The schedule to ramp up InFO in second quarter next year remains unchanged. We have already begun moving manufacturing equipment into our new facility in Longtan which is close to be completed now.

We are also engaging with major customer for volume production in the second half next year. Our expectation of InFO contributing more than $100m quarterly by 4Q next year remains unchanged.

TSMC's InFO technology does not need packages substrate and also provides a high density interconnect. This allows our solution to have benefit in form factor, that is, packages thickness and in electrical performance. We continue to work with major customer on developing the next-generation

InFO for further improvement and device performance and packages service.

I thank you for your attention. Now, turn the podium to Lora.

Lora Ho (SVP, CFO):

So I will make comments on structural profitability, CapEx and the long-term financial objectives. Let me start with structural profitability. We employ two key indices to monitor our structural profitability. The first one is standard gross margin referred to as GM, meaning the gross margin at a given level of utilization. The second one is standard utilization, the utilization level that we try to achieve or exceed.

Over the past five years we have seen consistent improvement in SGM while our utilization has also been at consistently high level. We plan to maintain or improve our structural profitability by maintaining or improving SGM and maintaining high utilization.

For advanced technologies, we are careful in peak capacity planning. For mature mainstream technologies, we are increasing our capabilities in various special technologies to ensure all the legacy capacity can be fully utilized.

After three years of operating at a high capital intensity level, about 50% CapEx intensity during the period from 2011 to 2013, our CapEx to sales has come down to about 40% last year in 2014 and is expected to be at a similar level this year. Going forward, we estimate our capital intensity ratio will be at about mid-30s level for the next few years.

Regarding CapEx, there may be some adjustments but we are evaluating the capacity conversion along with better productivity improvements. We are also increasing investment in specialty technologies. So for now, we keep our CapEx budget unchanged.

Let me move into long-term financial objectives. Over the five-year target, meaning from 2015 to 2019, the five-year target calls for a compound annual growth rate of 10% for both revenue and net income and a bigger or equal 20% in ROE.

The long-term growth rate of the overall semiconductor industry is expected to be growth about 4% to 6%, at a single digit -- mid-single-digit level. Foundry is expected to continue to outgrow the overall semiconductor market by a few points.

We plan to achieve the 10% compound annual growth rate in revenue by carefully positioning ourselves with the right technology and build appropriate capacity to capture the business. With the right technologies and sufficient capacity, TSMC is well-positioned to continue gaining market segment share in the foundry segment.

Our current five-year plan number is very close to the 10% revenue growth target. We believe we will grow double digit each year for the year 2015 and 2016, and we will continue to work on the 2017 to 2019 growth ahead of time. Thank you.

QUESTIONS & ANSWERS

Elizabeth Sun (Director of Corporate Communications):

All right. Thank you. This concludes our prepared statements. Before we begin the Q&A session, I would like to remind everybody to limit your questions to two at a time to allow all participants an opportunity to ask their questions. Questions will be taken both from the floor and from the call. Should you wish to raise your question in Chinese, I will translate that to English before our management answers your questions.

For those of you on the call, if you like to ask a question, please press the star then one on your telephone keypad now. Questions will be taken in the order in which they were received. If at anytime you would like to remove yourself from the questioning queue, please press the pound or hash key. Now let's begin the Q&A session.

Elizabeth Sun (Director of Corporate Communications):

Our first question comes from the floor. It will be Bank of America Merrill Lynch's Dan Heyler.

Daniel Heyler (Analyst - BofA Merrill Lynch):

Thanks for that. Thanks, Elizabeth. Gentlemen, good to see you again. Congratulations on the 10 nanometer on progress by the way. Relative to your competitors, that's good news.

A couple of things. First, on -- I wanted to address growth for 2016. You did talk about the potential to grow over 10% next year. In light of the slowing smartphone market, if it was, say, a 5% unit growth for smartphone units per se, what type of semiconductor growth would you anticipate for the overall industry, and then secondly, for TSMC within mobile? Thanks.

Morris Chang (Chairman):

2016 growth, what is the driver, is that the question?

Daniel Heyler (Analyst - BofA Merrill Lynch):

Yes, with 5% growth in smartphones, what kind of growth can we expect from TSMC's mobile-related semiconductor --

Morris Chang (Chairman):

You're talking about 2016, is that right? Well, first, we expect some market share gain, as C.C. had said and as I said a year ago, we expect that 16-nanometer market share will be much greater than our competitors, our next competitors. And overall, we also see other areas where we will be expanding market share. For instance, in the IoT area where immature, more less advanced technologies are used, some of our customers are doing very well. So I expect gains in market share.

And I also expect that the foundry segment of the semiconductor market will do better next year than this year. They did very well last year and so did we of course. We grew 25% last year. And we had a record fourth quarter last year. And our customers, for the most part, did very well last year also. And at the end of last year, it was, I think, last year, Christmas last year, was a Merry Christmas for a lot of people, and the expectations for this year were very high at that time. And, however, the big growth -- part of the big growth that we had last year went into supply chain inventory. And the supply chain inventory at the end of last year was indeed very high.

And now this year, with a number of things happening that Mark already mentioned, the outlook for this year has continued to deteriorate. And so in retrospect, we should average last year's growth rate with this year's growth rate. Last year we're 25%, and this year we're still looking for double-digit but certainly it's considerably lower than last year's 25%, this year. And so I do expect next year's organic growth rate, if you will, to be a little better than this year. And in addition to that, as I said, we expect market share gain.

Daniel Heyler (Analyst - BofA Merrill Lynch):

Okay. Thank you. So if I hear you correctly, mobile could certainly achieve at least double-digit growth.

Morris Chang (Chairman):

Mobile. Mobile (multiple speakers) --

Daniel Heyler (Analyst - BofA Merrill Lynch):

Mobile-related semicon.

Morris Chang (Chairman):

-- smartphones.

Daniel Heyler (Analyst - BofA Merrill Lynch):

Correct. So if you're growing at double-digit, would we see your -- the mobile part of your business grow, say, can it do a high single digit -- high double-digit type of growth, or should we see kind of growth across all the (multiple speakers) for you?

Morris Chang (Chairman):

Yes.

Daniel Heyler (Analyst - BofA Merrill Lynch):

So, would we see more growth across all of your segments be a lot closer, say, in that high double-digit range? Thank you.

Morris Chang (Chairman):

Correct.

Daniel Heyler (Analyst - BofA Merrill Lynch):

Thank you. And the second question, kind of a sub-question to this growth line is, as you look at processors coming out today, 8-core, 10-core processors moving to 16 nanometer, Cortex 72 looks pretty much like a PC-level processor, I'm wondering what kind of computational opportunities are there for you to grow next year as you look into the broader markets, with performance levels being as high as they are, we're now moving kind of out the smartphone era, much more into a compute capability, is that a growth opportunity --

Morris Chang (Chairman):

Higher performance -- higher performance computation. Mark, maybe you should answer the question.

Mark Liu (President and Co-CEO):

Yes, Dan. Indeed, the application processor of smartphones, the complexity keeps increasing. And still, that has to do with people, user experience of the smartphone today.

Morris Chang (Chairman):

I think he was talking about something more than -- beyond smartphone, yes.

Mark Liu (President and Co-CEO):

I'm getting there. And therefore, the silicon content of high-end smartphone, we think, will keep increasing because of that. Now for IoT -- I think it's the prelude of IoT application because IoT devices

currently are often using the smartphone as a transmitter, but that computation world hasn't really flourished yet, I think. That has to do with the service and application associated with IoT, and that is a big market we see the IoT will bring us in the future. And so this one is not yet for the computation for the IoT world. That's my perspective. And that is the growth momentum to come.

Daniel Heyler (Analyst - BofA Merrill Lynch):

So IoT as a portion of TSMC business today, do you guys have a rough ballpark figure of how much is IoT related to your business today and how big can it be? Relating maybe more just to the kind of the access point side of the equation. I know the processor side is difficult to calculate. Thanks.

Morris Chang (Chairman):

I think Dan has got his two nickels worth with our long answers. So let's go on with it. I'm sorry, yes (multiple speakers).

Mark Liu (President and Co-CEO):

Let me briefly answer to you. We see our customers bringing the connectivity function on many devices. Okay, so for us, the IoT portion is not specifically defined like other companies would produce IoT products or services. So we see this trend will continue and proliferate in many different segments. So we see that part keeps increasing, but today, it's hard to characterize a specific IoT among so many segments that we are doing today. We just see the connectivity and the computation is increasing in many segments.

Daniel Heyler (Analyst - BofA Merrill Lynch):

Interesting, thank you.

Elizabeth Sun (Director of Corporate Communications):

All right. Next we will have questions coming from Deutsche Bank, Michael Chou.

Michael Chou (Analyst - Deutsche Bank):

Thank you for taking my question. My first question is it seems that Intel is saying they will slow down the process migration to 2.5 years. The cadence actually would be longer than the previous node. So will that be the case for TSMC in 7-nanometer from 10 to 7?

Morris Chang (Chairman):

Well, you are looking at them right now. What was the time between 16 and 10? Is it two years? And the time between 10 and 7 is about one year, right? So for those two generations, for us anyway, it's three years. Now, well, Intel says it's two years. Or maybe we could do it sooner, but maybe Intel might do it later and we might do it later too. Two and half years sounds right. Did you understand my answer?

Michael Chou (Analyst - Deutsche Bank):

Yes. Thank you. The second question is given that you should start mass production of 10 nanometer by the end of 2016, so your customers' 10-nanometer product may hit the market in Q2 2017.

Elizabeth Sun (Director of Corporate Communications):

Yes. So you are trying to calculate -- triangulate the time when the customers' product will arrive at the marketplace using TSMC's 10 nanometer.

Morris Chang (Chairman):

Can we answer that question?

C.C. Wei (President and Co-CEO):

You try to narrow down exactly the time. But actually we ramp up 10 nanometer in the 4Q 2016 next year as Mark mentioned. But the real product shipment will be in 1Q 2017, yes. Exactly the new products into the market, I cannot comment.

Michael Chou (Analyst - Deutsche Bank):

Okay, but it seems that Intel say that their 10-nanometer platform will be in the second half 2017, so does that mean your 10-nanometer progress could be faster than Intel ? Can we say that?

C.C. Wei (President and Co-CEO):

I only say that our product 10 nanometer will be in the first quarter of year 2017.

Elizabeth Sun (Director of Corporate Communications):

All right. Next we will have questions coming from Credit Suisse, Randy Abrams.

Randy Abrams (Analyst - Credit Suisse):

Thanks. The first question I wanted to ask about the inventory correction. It's extended for two quarters. Now are you expecting as we go in the fourth quarter, potential for restocking where we traditionally go into a low season or do we wait until after Chinese New Year?

And then with 16-nanometer ramping up how much could that support fourth quarter being above seasonal? And also how do you see that 16-nanometer ramp in first half, if you expect to continue the steep ramp on 16 in the first half next year or it's more of a second half event?

Morris Chang (Chairman):

Mark.

Mark Liu (President and Co-CEO):

Well, the inventory picture is what you said correctly. And for the 16-nanometer, it's all our new products. So at this point we are ramping, but the inventory issue is not in the picture. We just keep the production ramp and in the second half this year and getting to the first half of next year.

Now only as we know that the demand, the customer demand is very strong and that is different than the inventory level I was commenting about.

Morris Chang (Chairman):

There's no supply chain inventory of 16 nanometer yet.

Randy Abrams (Analyst - Credit Suisse):

There's two parts to it. The first part is the core business, the existing 20 and above, if you expect restocking in fourth quarter. And then for 16 if you expect there's still a steep ramp in fourth quarter and then also a steep ramp continuing in the first half.

I guess I was curious do you expect the core business to have restocking in the fourth quarter so that's

above seasonal. And then also do you expect 16 to have a steep ramp continue in the first half.

Mark Liu (President and Co-CEO):

We expect the core business will in -- still continue in the depletion mode until the end of next year. Now then coming to the first quarter, we might see a restocking. But, as you know, the first quarter is a seasonal weaker quarter. So that [to] competition how that reflects on our demand is yet to be seen yet.

Elizabeth Sun (Director of Corporate Communications):

So, Randy, I suppose you have another part of your question, which is with the fast, steep ramp of 16 nanometer in 4Q, will we still have a fast, steep ramp of 16 nanometer in 1Q next year. That's your second part, right?

Randy Abrams (Analyst - Credit Suisse):

Yes. Okay, good. And if you could, the second question is on the CapEx. You mentioned capital intensity coming down. Was that a statement on next year so capital intensity reflects how we should look at 2016? And so far you're under-spending CapEx this year, so I'm just curious how you're seeing the overall CapEx levels whether it's kind of tracking similar ballpark this year and next year. And is there potential to actually start raising the dividend again next year if CapEx is not going up?

Lora Ho (SVP, CFO):

Yes, I just said the capital intensity will come down to the mid-30 level for the coming few years. With that and with the 10% growth target that we are targeting for, we are confident we are able to generate increasing free cash flow from operations. So we will consider dividend increase on a year-by-year basis when the time comes.

Elizabeth Sun (Director of Corporate Communications):

All right. I think this is about time that we will take our next question from the call. Operator, please proceed with the first caller on the line.

Operator:

The first question is from the line of Donald Lu from Goldman Sachs .

Elizabeth Sun (Director of Corporate Communications):

It's Donald Lu from Goldman Sachs , okay.

Donald Lu (Analyst - Goldman Sachs):

Thank you very much. My first question is on the compute opportunities. I know now TSMC seems to be narrowing the gap in the process technology and when should we see that the TSMC is really enter the notebook market? And also what is preventing TSMC's to -- ARM server or even TSMC -- made-at-TSMC server to enter the notebook market in large volume? Is that software or more of hardware.

Morris Chang (Chairman):

Elizabeth, you need to repeat the question.

Elizabeth Sun (Director of Corporate Communications):

Donald, I have to tell you that we did not really get your voice very clearly in here. So I'm just going to

repeat your question and correct me if I didn't hear you right. Your question is what is TSMC's opportunities in computation segment. Due to our ability to narrow the technology gap, when are we able to enter this market? And you are asking what is our advantage or differentiation especially if we are thinking of the market area where the ARM servers are related. Is this your question?

Donald Lu (Analyst - Goldman Sachs):

Yes. And also not only ARM servers but also notebook.

Elizabeth Sun (Director of Corporate Communications):

Also notebook, okay.

Donald Lu (Analyst - Goldman Sachs):

Yes. And also what is the bottleneck today. Is that software related or it's more of the hardware?

Elizabeth Sun (Director of Corporate Communications):

What will be the other factors that we need to overcome such software or architecture.

Donald Lu (Analyst - Goldman Sachs):

Yes.

Morris Chang (Chairman):

Also notebook?

Elizabeth Sun (Director of Corporate Communications):

Notebook yes. Servers and notebook.

Morris Chang (Chairman):

I think we are obviously very actively pursuing the market. As to what our advantage will be, it's our advantage as a foundry. We are going to pursue this market, this higher-performance computational market, with our foundry experience and foundry record and also the degree of trust that our customers have placed on us. That's our advantage. That's our differentiation.

Now of course, we need a very capable partner, as well as ARM. ARM, we already have. ARM has been a valuable partner for us for many years now, but in addition to ARM, we also will need a capable design company. And then the partners together, the 3 main ones, TSMC, ARM, the design company; and many others that we have always had, the equipment people et cetera, we think that we have a chance. We have a chance of becoming an important factor in that market.

Elizabeth Sun (Director of Corporate Communications):

Donald, are you happy with the answer?

Donald Lu (Analyst - Goldman Sachs):

Yes. Can you be more specific about -- Chairman, you talked about the capable partner. I believe there has been a few companies buying in the notebook market. Do you mean that you will be expecting a new company in this market or existing (inaudible) companies to use TSMC as a foundry.

Elizabeth Sun (Director of Corporate Communications):

Again I have to apologize because of the voice transmission has not been quite clear. So let me repeat what we think we have heard from you is that you want something more specific such as when Chairman talked about the capable partners in terms of design companies. And you are asking in the notebook area, there are -- I think you were saying that there are some consolidations and then what will be -- whether we will be able to have new customers coming in to work with TSMC as a good partner in this area. Is that what you were saying?

Morris Chang (Chairman):

Specifically who the partners -- who our partners will be? Well, specifically who are the most capable design companies? And our partners will be among those.

Elizabeth Sun (Director of Corporate Communications):

Okay. I guess let's come back to the floor and we will see if we can fix the voice issues on the call. Let me come back to the floor. Next we'll be having questions coming from UBS, Eric Chen.

Eric Chen (Analyst - UBS):

Okay, thank you. Good afternoon. My first question I would like to go to Lora. And Lora, you just mentioned the free cash flow will keep increase and let me double check. You mentioned before the free cash flow at the end of this year will double from the end of year 2013. Is that correct?

Lora Ho (SVP, CFO):

I don't have 2013 in front of me. I think based on our current outlook for the whole year, it should be right.

Eric Chen (Analyst - UBS):

Okay. So that indicates probably 35%, 40% year-on-year growth. Based on the CapEx to revenue ratio, the can I say guidance, the mid-13 you give and also the revenue target, so can we expect the same ratio growth for your free cash flow going forward?

Lora Ho (SVP, CFO):

I cannot answer that way. You have to figure out because I just said is revenue growth and free cash flow is going to increase. But it's hard for me to quantify the degree of increase every year. It's difficult.

Eric Chen (Analyst - UBS):

Okay. Okay, how about the other way. How about depreciation expenses growth? You gave a guidance for this year around mid teens. And based on your CapEx and the revenue target going forward, what kind of depreciation expenses growth we should expect?

Lora Ho (SVP, CFO):

I can only talk about this year, okay, because we have not fixed the CapEx for the remaining years. This year the depreciation is expected to go up by 13% year over year.

Eric Chen (Analyst - UBS):

13?

Lora Ho (SVP, CFO):

13% which is lower than the number I gave you last time. I said mid teen last time.

Eric Chen (Analyst - UBS):

Okay. And my second question I would like to go to Dr. Chang. And first on the EUV, how about the EUV, the schedule for 10-nanometer process? Some people talk about the window is closed. And how about the EUV for 7-nanometer process?

Morris Chang (Chairman):

I will pass the question to Mark.

Mark Liu (President and Co-CEO):

The window is not closed. We work very closely with ASML , and fiber is not without challenges. And we made very good progress on the source power as well as on the photoresist, and the mass inspection solution appears more likely. However, the current technology's challenge is more on the mask of the EUV technologies that is currently actively working with ASML .

On the tool stability, we have criteria for the working team to reach a certain target, and that target is likely to reach by the end of this year. And then we will start development using EUV tools.

As you can see in our 7-nanometer development schedule, that probably will not use EUV, but we are planning to exercise EUV using the 7-nanometer technology. And currently, we are planning to use EUV at 5-nanometer, but of course, it does depend on certain developmental milestones to be reached. And it has a good benefit from our assessment on the 5-nanometer that reduces a lot of many masking layers and increases a lot better control for the 5-nanometer.

Eric Chen (Analyst - UBS):

Okay, so let me clarify. Even for the 10 nano the window for the EUV for the 10-nanometer process is not closed yet.

Mark Liu (President and Co-CEO):

For 7 as I say we will exercise EUV on 7 nanometer. And we will plan our EUV on our 5-nanometer technology.

Eric Chen (Analyst - UBS):

But not for 10. Okay, thank you. Okay, thank you very much.

Elizabeth Sun (Director of Corporate Communications):

I think Eric has his two questions. He will come back later.

Next one I think is a question will come from Citigroup's Roland Shu.

I'm sorry, Roland, before you ask questions, let me make a brief announcement.

For those of you who are on the line trying to call in for questions, since we have this voice transmission problem, could you please send me your questions in email to my mailbox so that I can read out your questions. And I think most of you know my email address. That's Elizabeth_sun@tsmc.com. So if you are on the line waiting to ask questions please send me your questions through email. Thank you. So Roland now.

Roland Shu (Analyst - Citigroup):

Thank you. Good afternoon. I think my first question we know there are customer deposit to TSMC to reserve the capacity. Can we have more color on how TSMC is going to recognize the revenue for these customer deposits? Is the Q2 revenue guidance included these customer deposits? Thank you.

Lora Ho (SVP, CFO):

The customer deposits is a balance sheet item. So it not has to do with the P&L. There's a certain commitment from customers on loading. When they reach the loading we will return part of the deposit to them, so still a balance sheet item.

Roland Shu (Analyst - Citigroup):

Okay, so they never go to the P&L.

Lora Ho (SVP, CFO):

They are not.

Roland Shu (Analyst - Citigroup):

Okay, understood. Thank you. Okay, second question is for 28 nanometer, I think C.C. said there's a lot of second wave opportunity for 28 nanometer. And 28 nanometer last year contributed almost $8b in revenue to TSMC. So the question is with this contribution for second wave 28-nanometer application, for next year are we going to see 28-nanometer revenue continue to expand even more than this $8b level?

Morris Chang (Chairman):

Can you repeat this?

Elizabeth Sun (Director of Corporate Communications):

So Roland's question is that 28 nanometer has been a very big node for us. Last year according to Roland's estimate that we have made $8b revenue from 28 nanometer. So with the second wave applications coming in, his question is will we be able to expand that $8b revenue next year from 28 nanometer's second wave customers.

Morris Chang (Chairman):

I don't know about the $8b. If you think it's $8b maybe it's $8b. I can't verify that. But I can say that 28 nanometer will continue to be strong for several years.

Roland Shu (Analyst - Citigroup):

Okay, thank you. If I can -- maybe I can ask another question. For 20 nanometer and 16 nanometer, I think TSMC already said this will be the same technology node and also we are expecting much bigger market share for 16-nanometer next year. So will the combined 20-nanometer and 16-nanometer revenue to reach bigger than 28-nanometer last year?

Morris Chang (Chairman):

What is the question?

Roland Shu (Analyst - Citigroup):

For 20-nanometer and 16-nanometer revenue together next year, will this revenue bigger than 28-nanometer revenue in last year or this year?

Elizabeth Sun (Director of Corporate Communications):

Okay, 20 plus 16 together next year, will that be bigger than 28 nanometer last year or this year?

Morris Chang (Chairman):

Again I don't know the answer to that. What I can say is that 16 next year will be much bigger than 20 this year. And as a percent of total corporate revenue, 16 next year will be higher than 20 this year. And next time Roland will probably come in and tell me how many billion dollars we are billing.

Elizabeth Sun (Director of Corporate Communications):

Okay. Now at this point I think we have Brett Simpson on the line and he has already sent me his questions. So operator, first please open the line for Brett Simpson and then I'm reading out his questions. And then our management can answer and then Brett may have a follow up.

Brett Simpson's question number one, you talked about your outlook for 16-nanometer -- no, for 2016, double-digit revenue growth and mid 30s CapEx to sales ratio. What do you foresee FinFET to be as a percent of sales in 2016 and directionally how might 28-nanometer and 20-nanometer trend? Can they grow in 2016?

Morris Chang (Chairman):

Say it again.

Elizabeth Sun (Director of Corporate Communications):

16-nanometer percentage of revenue next year. So whether 28 and 20-nanometer will be bigger next year than this year.

Morris Chang (Chairman):

16's percentage of revenue will be what?

Elizabeth Sun (Director of Corporate Communications):

Yes, he's asking us how much we will get as a percent of revenue from 16-nanometer next year.

Morris Chang (Chairman):

Well, I stick with my previous answer. 16 next year our revenue percentage and revenue dollars will be greater than 20 this year.

Elizabeth Sun (Director of Corporate Communications):

All right.

Morris Chang (Chairman):

And is there another one? Is there another question?

Elizabeth Sun (Director of Corporate Communications):

Okay. The second part is 28-nanometer and 20-nanometer whether they will be bigger next year than this year.

Morris Chang (Chairman):

28?

Elizabeth Sun (Director of Corporate Communications):

And 20.

Morris Chang (Chairman):

And 20 will be --

Elizabeth Sun (Director of Corporate Communications):

His question is whether they will be bigger next year than this year.

Morris Chang (Chairman):

20 -- can you maybe answer to that one?

Lora Ho (SVP, CFO):

C.C. and Mark was talking about expanding the 28 technology offering to more features. So with that we believe our 2016 28-nanometer revenue will continue to grow. It will be bigger than this year.

Elizabeth Sun (Director of Corporate Communications):

I think 20-nanometer we have already mentioned in C.C.'s comments earlier which is a smaller level next year than this year. I think C.C. has already mentioned that.

Okay, so Brett's second question. Consolidation among your customers, they are talking about savings with foundry partners as a result of higher scale economies. Can you give us your perspective on the impact that large-scale M&A has on wafer pricing?

Morris Chang (Chairman):

I don't expect any impact. I think of course when two companies combine there are synergies and there are savings. But that doesn't necessarily mean that we have to save for them.

Elizabeth Sun (Director of Corporate Communications):

Okay. This is a very clear answer. And Brett has another question. When you think about capacity planning for 10 nanometer, 7 nanometer how does this compare with 28 capacity and 20/16 nanometer. Should we assume that with lower capital intensity that 10 and 7 nanometer will be smaller nodes for TSMC in wafer capacity?

Morris Chang (Chairman):

Say it again.

Elizabeth Sun (Director of Corporate Communications):

Whether or not 10 and 7 will be smaller than 20 and 16.

Morris Chang (Chairman):

In what?

Elizabeth Sun (Director of Corporate Communications):

In capacity.

Morris Chang (Chairman):

Look, let me just say it in an overall sense. We expect -- 28 of course was very successful and we expect 20 and 16 together to be at least as successful as 28 over its -- over the two lives -- over the lives of the two. In fact, we expect 20 and 16 together to be bigger in revenue over the lives of those two technologies than 16.

Now 10 and 7, our present plan is that in terms of wafers, if maybe combining the 10 and 7 together, in terms of wafers may be a bit lower than 20 and 16. In terms of dollars, we expect it to be as significant as 20 and 16, again, over the lives of the respective technologies.

Elizabeth Sun (Director of Corporate Communications):

Okay. Brett, I think we have addressed all three questions you sent over. And if you have further follow-up please send me an email again. Let's come back to the floor. Next we will -- questions will be coming from Daiwa's Rick Hsu.

Rick Hsu (Analyst - Daiwa):

Thank you for taking my question. My questions is about your Q4 outlook. Can you give us more color about that because you were talking about your demand driver is coming from iPhone -- new iPhone launches which seems to me is back-end loaded. And you're talking about your -- another your demand driver is coming from 16-nanometer FinFET ramp up. That is also kind of a back-end loaded given the long cycle time. Can we fairly anticipate your Q4 total revenue would be better than Q3?

Morris Chang (Chairman):

Well, we are not ready to forecast Q4 at this meeting. Now I think there was a related question that was pre-submitted. No, it wasn't pre-submitted. I saw it on Taiwan newspaper today.

The related question, I am ready to answer that. So let me just answer. The related question appeared in the Commercial Times -- the question was, with the inventory going down so slowly, what is the implication for the fourth quarter this year and first quarter next year? So I thought it was a pretty good question. So I got ready to answer that one, and maybe answering that one will also at least partially answer yours.

Clearly, the slowly decreasing inventory is not a very good omen for the fourth quarter. The inventory is being depleted more slowly than what we expected. However, the impact on the first quarter is an entirely different story. We do expect that by the end of the fourth quarter, inventory will be back to the so-called seasonal level or even lower, and that bodes very well for the first quarter.

But still, having said all of that, I still repeat to you another thing I said. For the entire year, we still think that we will have double-digit growth.

Rick Hsu (Analyst - Daiwa):

Okay, thank you so much. My second question is about maybe in 2016 or 2017, how do you see the rise of the Samsung in-sourcing strategy.

Morris Chang (Chairman):

How do we see the what?

Rick Hsu (Analyst - Daiwa):

The increase of the Samsung in-sourcing strategy.

Elizabeth Sun (Director of Corporate Communications):

Samsung's using more of its internal products than go to foundry.

Morris Chang (Chairman):

It reduces the foundry market. We count that as non-foundry market.

Rick Hsu (Analyst - Daiwa):

Thank you so much.

Elizabeth Sun (Director of Corporate Communications):

Okay, all right. Now since several analysts have sent me questions, I need to read out the next one. And operator, please open the line for Mehdi Hosseini. Mehdi has two questions.

One, how will consolidation among China-based smartphone OEMs impact TSMC's revenue CAGR of 10%? China smartphone OEMs consolidation impact TSMC's 10% CAGR.

Morris Chang (Chairman):

C.C., you're going to answer.

Elizabeth Sun (Director of Corporate Communications):

China's OEM consolidation. Smartphone OEMs.

Morris Chang (Chairman):

Smartphone OEMs consolidation. I don't think any of us is really qualified to answer.

Elizabeth Sun (Director of Corporate Communications):

Sorry Mehdi, we cannot answer. Second question.

Morris Chang (Chairman):

I think it gets to the consolidation of some of our customers' customers in China. I think that's what you ask.

Elizabeth Sun (Director of Corporate Communications):

Right.

Morris Chang (Chairman):

So it doesn't appear that we can answer that.

Elizabeth Sun (Director of Corporate Communications):

Second question is still related to our CAGR of 10%. What are the key assumptions for wafer shipment and ASP trends in our revenue CAGR guide of 10%?

Morris Chang (Chairman):

I don't know. All I want to do is to make at least 10%. And it's a bottom up thing. It's not something that -- it's not top down. Actually 99% of our plans and forecasts are bottom up. And so when you say, what are the assumptions and so on, I have to talk to, ask 50 people what their assumptions are. And I just or I should say we, we just tend to trust them.

Actually, on the whole, for years or maybe even decades, on the whole, they have done a pretty good job. They have done a much better job in forecasting or planning in this bottom-up way than any top-down kind of thing. Top down, you make assumptions and so on, and your assumptions could be all wrong. Bottom-up, of course, many people make assumptions, and I'll have to ask 50 people or maybe even 100 people, and I certainly am not going to do that. But anyway, that's our 10%, right. The 10% is the bottom-up kind of a forecast.

Elizabeth Sun (Director of Corporate Communications):

Okay. Since there are still quite a few questions posted online, I'm going to the next one online which is from Steven Pelayo at HSBC. Steven has a couple of questions. I'm just reading it out. Clarification of full-year guidance. You said full year to grow double digit. But you also recently said second half 2015 will be greater than first half.

Morris Chang (Chairman):

I said that -- I said that in June of -- June 9 something like that, shareholders meeting. Well, that forecast has become more marginal now.

Elizabeth Sun (Director of Corporate Communications):

Okay, so then.

Morris Chang (Chairman):

So I said two things. Meaning first, the second half will be better than the first half. Second, whole year will be double digit. The second part still holds. The first part may still be true, but as I said, it has become more marginal now.

Elizabeth Sun (Director of Corporate Communications):

Since Chairman has already answered this, so I won't get Steven's follow-up questions, which is all the minute details of that first half, second half thing. But then he indeed had a question about third quarter guidance. He said, 3Q guidance of 1% to 2% growth, what nodes will grow and which will decline or all stable.

Morris Chang (Chairman):

Say it again.

Elizabeth Sun (Director of Corporate Communications):

All right. He wants to have colors on third quarter node by node sequential growth.

Morris Chang (Chairman):

For third quarter, node by node sequential growth.

Elizabeth Sun (Director of Corporate Communications):

Growth or decline?

Morris Chang (Chairman):

Can we answer that Lora or C.C. or Mark? Do you want to answer that?

Lora Ho (SVP, CFO):

Let me try. I will not answer node-by-node revenue growth, but I can give you some color on the segment growth. The third quarter, we believe communication will come down, computer will go up, consumer will go up, and industrial and others will go up.

Elizabeth Sun (Director of Corporate Communications):

So, okay, with that, let's come back to the floor. Michael Chou from Deutsche Bank has follow up questions and then afterwards we'll go to JPMorgan .

Michael Chou (Analyst - Deutsche Bank):

Thank you.

Morris Chang (Chairman):

Michael is with Deutsche Bank? Were you the one that I thought said was a pretty smart question in the commercial?

Michael Chou (Analyst - Deutsche Bank):

In 10 nanometer actually given what would seem 16 nanometer for your market share, do you think your first year in 10 nanometer --

Morris Chang (Chairman):

You didn't answer my question. Were you the one that asked that question about how the inventory decrease will impact, were you the one? No? Randy? I thought it was Deutsche Bank. Randy, you're not Deutsche Bank are you? Okay, never mind, you ask your question then.

Michael Chou (Analyst - Deutsche Bank):

Okay. Do you expect your 10 nanometer market share in the first year will be quite dominant?

Morris Chang (Chairman):

What's that?

Michael Chou (Analyst - Deutsche Bank):

Your 10-nanometer market share in the first year.

Morris Chang (Chairman):

10 nanometer?

Michael Chou (Analyst - Deutsche Bank):

Market share in the first year going forward will be quite big. Given what we've seen in 16 nanometer --

Morris Chang (Chairman):

What would 10-nanometer market share be?

Michael Chou (Analyst - Deutsche Bank):

Yes. For the first year.

Morris Chang (Chairman):

Well, do you want to answer that? Well, actually, the answer is we don't know. The first year, 10-nanometer will be -- really, first year will be year after next, All right, 2017. I mean, it will start end of next year. Start means, as you know, not very many wafers. And 2017, it will become quite significant. All right, I will try to answer you. I think it would be bigger than the first year 16-nanometer market share.

Elizabeth Sun (Director of Corporate Communications):

That's a very safe one. Okay, now we're going to JPMorgan , Gokul Hariharan.

Gokul Hariharan (Analyst - JPMorgan):

Yes, thank you. Dr. Chang, I just wanted to get your updated view on what you think about locating a 12-inch fab in China given that China semiconductor ecosystem seems to be developing very quickly. Any updates or any new thoughts on also what's happening in terms of the Chinese semiconductor ecosystem build-out itself?

Elizabeth Sun (Director of Corporate Communications):

All right, Gokul's question is, can we talk about whether we have a plan to build a 12-inch wafer fab in China? Can we comment on our competitors building out ecosystems in China?

Morris Chang (Chairman):

We are only considering it, and we have no comment on the competitors doing it.

Gokul Hariharan (Analyst - JPMorgan):

Okay. A follow-up on the new areas of growth that you mentioned like IoT, automotive, industrial going from next year onwards. There is a perception that a lot of that growth could be happening in mature nodes and not so much in advanced nodes. Could you address what areas would that growth be coming from because in the past a lot of the new markets have been demanding advanced processes rather than the mature processes.

Elizabeth Sun (Director of Corporate Communications):

All right, so Gokul's second question is with respect to the new growth area, since we have mentioned the new growth area of IoTs, automobiles, industrial, he thought that these are all more related to the mature nodes and not necessarily the leading edge or the advance nodes. So he liked to have us --

Morris Chang (Chairman):

I missed the last few words.

Elizabeth Sun (Director of Corporate Communications):

Those applications tend to use only the mature node and not the advanced nodes. So what will be the growth opportunities that would probably use the advanced nodes, right?

Morris Chang (Chairman):

As long as there is a new application it's growth, I mean yes, they use mature nodes, but generally, they don't use those, just the mature equipment. We have to upgrade the equipment. We have to make couple of investments. In fact, we have all along been making considerable capital investments in the mature nodes, in some years more than other years. I think we have been telling you most years how much of our capital CapEx is in the leading nodes and so on. And there is a pretty significant portion that's not leading edge, so that's the mature nodes. And usually, there is considerable investment, additional investment we need to make to adapt the equipment to -- it's not really changing the equipment. It's buying new equipment in order to do the specialty IoT kind of products. So even if it's a mature node, it means growth.

Elizabeth Sun (Director of Corporate Communications):

Okay, I think Donald Lu over some follow-up questions, I will read it out right here. Donald's question, do you still think that global foundry, I mean it's not that company in New York, it's worldwide foundry 14 nanometer and 16 nanometer capacity is rational, i.e. whether or not the world's overall 14 and 16 nanometer capacity will that be rational?

Second question, does TSMC still expect its smartphone content to increase year over- ear in 2015 and 2016?

Morris Chang (Chairman):

First question?

Elizabeth Sun (Director of Corporate Communications):

Whether the total capacity will be rational? Whether they will be rational?

Morris Chang (Chairman):

The 16 nanometer?

Elizabeth Sun (Director of Corporate Communications):

Yes.

Morris Chang (Chairman):

I think the 16 nanometer global capacity will be rational. And the second question, well look, there are many companies in the 16 nanometer. So where there are just a few players, I expect the capacity to be more rational than if they are lot of players. And another thing is it's very expensive, well, anyway more expensive than the 10 and a lot more expensive than the unknown, more so on the 20. And a lot more expensive than the 28 on top of the 16 now. So those two reasons, few players and very expensive capacity, make me think that the 16 capacity will be rational. And the second question?

Elizabeth Sun (Director of Corporate Communications):

Do we expect the smartphone content to increase for us?

Morris Chang (Chairman):

The answer is yes. And do you have a more quantitative answer? You do? Good.

Lora Ho (SVP, CFO):

The overall content for the smartphone for us will increase next year versus this year in general slightly, but especially on the high end --

Morris Chang (Chairman):

I think he means how many dollars we have --

Lora Ho (SVP, CFO):

Yes, that's what I am talking about. Especially high end smartphone, we expect the content dollars will go up by $1 next year from this year.

Morris Chang (Chairman):

And mid- to low-end also.

Lora Ho (SVP, CFO):

Yes, mid-, low end also increase slightly.

Morris Chang (Chairman):

Integrated. Our TSMC dollars in it.

Elizabeth Sun (Director of Corporate Communications):

Okay, now we are coming back to the floor. This question will be coming from Dan Heyler, Bank of America .

Daniel Heyler (Analyst - BofA Merrill Lynch):

Just a quick follow-up on Lora's numbers there, could you remind us from what -- you said $1, so what's the absolute number for 2016 in terms of content at the high end and the middle to low end?

Lora Ho (SVP, CFO):

Okay for high end the dollar will be from $18.7 to $19.7 for TSMC.

Daniel Heyler (Analyst - BofA Merrill Lynch):

Right. Okay. And then on the market share opportunities that you highlighted in mobile, Dr. Chang, you mentioned that next year within the mobile market you anticipate the potential to increase share. Does that require significant share gains across kind of -- will that be share gains across all the customers or do you anticipate some share loss at say one of the major customers in those assumptions, because it looks as though competition is actually increasing in mobile, so I wanted to get more color.

Morris Chang (Chairman):

No. Share gain for every customer, well, that is -- that can only be dreamed of. There are always some share gains and some share losses, but on the whole, I expect a share gain, yes.

Elizabeth Sun (Director of Corporate Communications):

Follow-up question from Credit Suisse, Randy Abrams.

Randy Abrams (Analyst - Credit Suisse):

I just wanted to follow up on last quarter you mentioned FinFET would be better than your prior plan, implying like low teens growth by fourth quarter. Could you give an update on the pace of that, like if you'll get some revenue in third quarter and you still expect over 10% fourth quarter and the 20 node in the second quarter got close to 20%, so if we could get toward that by first half next year?

Morris Chang (Chairman):

Will you repeat the question?

Elizabeth Sun (Director of Corporate Communications):

Sorry, I was busy with my BlackBerry.

Randy Abrams (Analyst - Credit Suisse):

Okay, so I was just asking if FinFET, if you still expect to have some revenue in third quarter over 10% in fourth quarter and then to match 20% to get about 20% of sales by first half.

Morris Chang (Chairman):

Do I expect in the third quarter 10% did you say?

Randy Abrams (Analyst - Credit Suisse):

In third quarter to get revenue and then fourth quarter 10% or more revenue and then first half that start approaching 20%.

Morris Chang (Chairman):

I don't I said anything about 10%.

Elizabeth Sun (Director of Corporate Communications):

That's right.

Morris Chang (Chairman):

I said 10% by the whole year.

Randy Abrams (Analyst - Credit Suisse):

I think last conference the comment was --

Elizabeth Sun (Director of Corporate Communications):

Randy, I think we remember, last conference one analyst was saying that he predict we will get 12% revenue from 16 nanometer in the fourth quarter. But the management did not agree to that number. The management did not accept that 12% number.

Randy Abrams (Analyst - Credit Suisse):

Okay.

Elizabeth Sun (Director of Corporate Communications):

That was last time.

Morris Chang (Chairman):

Was that your question?

Randy Abrams (Analyst - Credit Suisse):

Yes, my question was if you could comment how it will grow as a percent of sales over the next couple of quarters?

Elizabeth Sun (Director of Corporate Communications):

How will the 16 nanometer grow as a percent of our revenue in the next few quarters?

Morris Chang (Chairman):

Want to talk about that? Well, do you want to talk about -- I know that we don't want to talk about fourth quarter, but do you want to talk about third quarter?

Lora Ho (SVP, CFO):

Third quarter will be very small single-digit revenue contribution.

Morris Chang (Chairman):

16 nanometer, it's very little.

Randy Abrams (Analyst - Credit Suisse):

Okay.

Morris Chang (Chairman):

I mean we started ramping when? Three months, four months ago, last month. And the process cycle is very long, Randy.

Randy Abrams (Analyst - Credit Suisse):

Okay.

Morris Chang (Chairman):

It's months before we get the first finished wafer out, and some customers want us to do the bumping and all that stuff. And that takes longer, so it's a long time between first starting to ramp and the time you get even the first wafer out. So third quarter will be very little.

Randy Abrams (Analyst - Credit Suisse):

Okay. It sounds like you don't want to mention on fourth quarter. I guess the other question I was going to ask on structural profitability where you were talking in the prepared remarks, do you still expect structural profitability to be in line to better, like you've kind of maintained that track record the last few years, if as you look out over next 12 months, you still have that trajectory?

Lora Ho (SVP, CFO):

Yes, the answer is yes.

Randy Abrams (Analyst - Credit Suisse):

Okay, thank you.

Elizabeth Sun (Director of Corporate Communications):

Good, all right. There is a question coming to my BlackBerry from Arete's analyst Jaguar Bajwa. His question is this, how does the strategy of quicker node transitions and the reuse of tools as we have seen in 20 nanometer to 16 nanometer affect the depreciation for new process nodes? And does this tool transition allow you to offer better ASPs to your customers? So quicker nodes transition, reuse of tools, whether this translates to better ASP to customers and how that affects depreciation?

Morris Chang (Chairman):

Well, I can answer in a very general manner. That is something making one generation's tools compatible with the next generation or vice versa. That has been a prime effort of TSMC R&D and TSMC operations in the last three or four years. That, of course, started because the complexity of the process has increased and because we have adopted the faster cadence of the technology.

So now I think the prime effort, this very big focus on reducing what we call -- internally, we call it the conversion loss. Our effort in reducing the conversion loss has won a lot of fruit. And now in the ideal case, all the tools are compatible, but that's impossible now because when you advance, going from 16 to 10, you do need new equipment. That's, even now, still being developed by our equipment partners, such as supply materials and so on. However, we have been able to reduce the conversion loss to a very low level now. And I think from that, we can start calculating depreciation and whatnot. You want to add anything to what I said, yes?

Lora Ho (SVP, CFO):

I can add some comments on these equipment migrations. Just like Chairman said, the operation and R&D people made a tremendous effort, trying to increase the migration rate. As far as we can see now from 20 to 16, 16 to 10, we can manage migration. More than 95% of the tool can be reusable.

Elizabeth Sun (Director of Corporate Communications):

Okay, now there is another follow-up question sent over by Steven Pelayo at HSBC and his question is this. Since TSMC learned a lot at 20 nanometer, will a steeper ramp of 16 nanometers this year not impact gross margin too much, i.e. not much of a dilution or perhaps the faster learning will allow for higher stocking 16 nanometer gross margin compared to 20 nanometer, whether 16 nanometer gross margin will be higher than 20 nanometers at the starting stage.

Morris Chang (Chairman):

Yes. I think the answer is 16 -- we have learned a lot from 20-nanometer to benefit 16-nanometer. And therefore, as a result, we expect 16 to be more profitable than 20, and we expect a new learning curve to actually be a part of the 20-16 total learning curve, and I think that's actually one of the advantages of the faster cadence.

Elizabeth Sun (Director of Corporate Communications):

Okay, now we come back to the floor. The question will be coming from UBS, Eric Chen.

Eric Chen (Analyst - UBS):

Okay, thank you, my question, I probably have just one question and go through the other way. You talk about a 28-nanometer process and then you talk about HPC. And I would like to get a rough idea for your 28 nanometer process business, how many percent go through the HPC and how about HPC+ and going forward, what kind of exploitation we should keep.

Mark Liu (President and Co-CEO):

Chairman, I can answer. Actually I cannot give you the exact number, but I can give you the taste on the tape-put. Our 28 nanometers tape-out right now is higher than any quarter previously we announced and most of the tape-out are in 28 HPC and HPC+, so that gives you a hint of future business what is the percentages is there going to be.

Eric Chen (Analyst - UBS):

Okay, got it. So I don't get it. I mean, for the HPC, my understanding is lower than average of the 28-nanometer process business. And given the low I just mentioned, for your low end, the smart-phone IC, the content value will increase slightly, but it doesn't match -- if for HPC, the revenue keeps increasing, I assume that the low-end smart-phone IC, their content value, should decline. Thank you.

Lora Ho (SVP, CFO):

Let me be more precise on the content. I was talking about the high-end smart-phone. TSMC revenue will go up. Actually, the number is -- this year is $17.80. Next year, $19.7, so it's $2 up. That's the high end. The mid-end, $6 this year, $6.4 next year, slightly up. The low end will be the same, $3.40. The next year, it will be the same, okay.

Eric Chen (Analyst - UBS):

Okay, so that's good. And even other HPC the percentage will increase but will still keep at the low end, probably at the low end the ASP, right?

Mark Liu (President and Co-CEO):

Actually it's not only the smartphone using the HPC or HPC+, it's the second wave a lots of other products, they are using HPC and HPC+.

Eric Chen (Analyst - UBS):

Got it, so we worry about the other foundry makers say the second tier foundry maker, they are more aggressive their wafer prices strategy at the 28-nanometer process, we would like to keep the overall the blended ASP.

Elizabeth Sun (Director of Corporate Communications):

Well, Eric, maybe I can do a little bit clarification here. When Lora talk about mid-end, low-end smartphone content, it is not just from one geometry, it has many silicons inside and that's an average price. HPC or HPC+ is only adopted by certain applications in those boxes and they are not the whole thing.

Eric Chen (Analyst - UBS):

So that's more like product mix from 14 to 28 [nanometer].

Elizabeth Sun (Director of Corporate Communications):

The overall silicon content of the smartphones doesn't matter it's a low end or mid end or high end, those contents are increasing because of complexity and functionality.

Morris Chang (Chairman):

Or at least ours.

Elizabeth Sun (Director of Corporate Communications):

Ours is increasing.

Morris Chang (Chairman):

Silicon content is increasing yes.

Eric Chen (Analyst - UBS):

Thank you very much, Lora, (inaudible).

Elizabeth Sun (Director of Corporate Communications):

Thank you. So I think it's about time that we should end our conference here, and thank you very much for coming over. Before we conclude the conference, please be advised that the replay will be accessible within three hours from now. Transcript will be available 24 hours from now, and those are all available through TSMC's website at www.tsmc.com. So thank you for coming. Hope to join us again next quarter.